

Machine translation JP11246399

B17

(19)**Publication country**Japan Patent Office (JP)
(12)**Kind of official gazette**Publication of patent applications (A)
(11)**Publication No.**JP,11-246399,A
(43)**Date of Publication**Heisei 11(1999) (1999) September 14
(54)**Title of the Invention**Lipid metabolism improving composition
(51)**International Patent Classification (6th Edition)**

A61K 31/12 ADN

A23L 1/30

// A61K 35/78

FI

A61K 31/12 ADN

A23L 1/30 B

A61K 35/78 C

Request for ExaminationUnrequested**The number of claims** 1**Mode of Application**OL**Number of Pages**5(21)**Application number**Japanese Patent Application No. 10-51021(22)**Filing date**Heisei 10(1998) (1998) March 3(71)**Applicant****Identification Number**000006769**Name**Lion incorporated company**Address**1-3-7, Honjo, Sumida-ku, Tokyo(74)**Zero above-mentioned representative****Patent Attorney****Name**Kanda Justice(72)**Inventor(s)****Name**Keita Someya**Address**1-3-7, Honjo, Sumida-ku, Tokyo Inside of lion incorporated company(72)**Inventor(s)****Name**Miyazawa ******Address**7-17-7, Takamori, Izumi-ku, Sendai-shi, Miyagi-ken(72)**Inventor(s)****Name**Shallow well ****Address**19-26, Tachimachi, Aoba-ku, Sendai-shi, Miyagi-ken Saint-Lo DOHAITSU Tachimachi 2-105**Abstract:**

PROBLEM TO BE SOLVED: To obtain the subject composition harmless to human body and having triglyceride lowering action by including a curcumin as an active ingredient. SOLUTION: This composition is obtained by including one or more selected from a curcumin [e.g. 1,7-bis(4-hydroxy-3-methoxyphenyl)hepta-1,6-diene-3,5-dione] and its derivative {e.g. demethoxycurcumin [4-hydroxy-cinnamoyl-(4-hydroxy-3-methoxy-cinnamoyl)methane]} as an active ingredient. The composition, when to be used as a pharmaceutical, can be administered by oral administration, intravenous injection, hypodermic injection or the like using a curcumin or its derivative, as

necessary, combinedly with another lipid metabolism improving composition and the daily adult dose is preferably 1-30 mg/kg-body weight. The composition can be prepared as soft capsules, tablets, granuled or the like.

成分	投与量	トリグリセリド (mg/kg)
対照群	-	39.9 ± 2.5
投与群	1%クルクミン	18.1 ± 4.9*
比較群1	1%オリーブオイルヘキサゲン抽出物	28.4 ± 7.1
比較群2	1%ローズマリーヘキサゲン抽出物	38.7 ± 11.5

(*) : 対照群と比較してP < 0.05で有意

JPO Machine translation abstract:

(57) Abstract

SUBJECT A safe lipid metabolism improving composition is provided also to the human body which has a hypotriglyceridemic action.

Means for Solution A lipid metabolism improving composition containing at least one sort chosen from curcumin and its derivative as an active principle.

Claim(s)

Claim 1 A lipid metabolism improving composition containing at least one sort chosen from curcumin and its derivative as an active principle.

Detailed Description of the Invention

0001

Field of the Invention This invention relates to a safe lipid metabolism improving composition also to the human body which has a hypotriglyceridemic action.

0002

Description of the Prior Art Conventionally, the content concentration rise in the blood of the lipid represented by triglyceride and cholesterol and an organ is considered to be the risk factor of adult disease induction of arteriosclerosis, a fatty liver, etc.

0003 Although PUROBA statin, a KUROIHIBU rate, nicomol, dextran sulfate, tocopherol nicotinate, etc. are known as a hyperlipemic drug in the former, for example, it is the actual condition which cannot say easily what each fully satisfies in respect of these side effects it has, and an effect.

0004 On the other hand, curcumin and its derivative are contained in the flora of the tropical area and the subtropical system which are represented by the turmeric (*Curcuma longa* L.) which is the Zingiberaceae perennial. It is used as colorant for edible speiss, edible, and garments, and also the turmeric is used as medical use especially in the Asian area until now.

Although a cholagogic operation (choloretic action), built-in (liver, pancreas) functional potentiation, anti-inflammatory activity, the hemostatic action, and the stomachic operation are known as the pharmacological action, relation between the drug effect and each medicinal properties is not yet clarified thoroughly.

0005 On the other hand, although it is known by JP,H7-149628,A that alpha-curcumene ($C_{15}H_{22}$) of the *Curcuma xanthorrhiza* (*Curcuma xanthorrhiza*) origin which is the Zingiberaceae perennial has a hypotriglyceridemic action, The chemical structure differs in curcumin ($C_{21}H_{20}O_6$) clearly. As a physiological function which the curcumin known until now has, it is a report of a cholesterol lowering action besides an antioxidant action and a cancer inhibition operation. Although there are **Internat.J.Vit.Nutr.Res., Vol.61, p364 (1991)**, it is not yet known that curcumin and its derivative have a hypotriglyceridemic action.

0006

Problem(s) to be Solved by the Invention This invention tends to cancel this in view of the above-mentioned conventional actual condition etc.

The purpose is to provide a safe lipid metabolism improving composition also to the human body

which has a hypotriglyceridemic action.

0007

Means for Solving the Problem This invention persons have the operation which a specific component contained in a flora etc. of a turmeric system which is the Zingiberaceae perennial plant as a result of inquiring wholeheartedly that an aforementioned problem etc. should be solved inhibits for accumulation of triglyceride in liver, and. By finding out that safety is high also to a human body, it succeeds in obtaining a lipid metabolism improving composition of the above-mentioned purpose, and came to complete this invention. That is, a lipid metabolism improving composition of this invention contains at least one sort chosen from curcumin and its derivative as an active principle.

0008

Embodiment of the Invention Below, an embodiment of the invention is described in detail. The lipid metabolism improving composition of this invention contains at least one sort chosen from curcumin and its derivative as an active principle.

0009 The curcumin used for this invention is 1,7-bis-(4-hydroxy-3-methoxyphenyl) hepta-1,6-diene-3,5-dione, and is demethoxycurcumin as a curcumin derivative, for example. **4-hydroxy-cinnamoyl (4-hydroxy-3-methoxy-cinnamoyl) methane** Bis-demethoxycurcumin **Bis-(4-hydroxy-cinnamoyl) methane** ** is mentioned. These can use anything of chemosynthesis or vegetable origin. For example, curcumin and/or its derivative can be extracted from vegetation, such as an arrowroot from India, zedoary, mango JISHIJA, yellow zedoary **besides the turmeric (Curcuma longa L.) of the Zingiberaceae perennial**, black zedoary, and gallane girl. Although the compound with at least one pure sort chosen from curcumin and its derivative can be used in this invention, Unless an impurity unsuitable as not the thing limited to this but drugs and foodstuffs is contained, half-refining or crude curcumin, and/or its derivative can also be used. For example, from the above-mentioned turmeric to a rough curcumin extract. Usually, what bis-demethoxycurcumin 5% was contained demethoxycurcumin 7%, and curcumin could use this rough curcumin extract 37% of the weight (only henceforth "%"), and refined curcumin etc. from this curcumin extract to 100% may be used.

0010 As at least one sort of preparing methods chosen from the curcumin used for this invention, and its derivative, a publicly known method is employable from the former, for example. For example, grind in mean particle diameter of 250-500 micrometers, and a turmeric on a hydrophilic solvent and a concrete target. Using ethanol, acetone, and ethylene dichloride, an extract is obtained, it ranks second with a Soxhlet method or a cooling filtration process, and the method of refining this extract using distillation under reduced pressure and a silicic acid column, etc. are mentioned.

0011 The lipid metabolism improving composition of this invention contains one sort (independent) or two sorts or more as an active principle by making into an active principle at least one sort chosen from the curcumin mentioned above and its derivative, namely, they can be used for it as drugs, ingesta (elegance), etc. When using as drugs, it can use together with other lipid metabolism improving agents the above-mentioned curcumin and its derivative, at least one selected sort, or if needed, and a medicine can be prescribed for the patient by various methods, such as internal use, an intravenous injection, subcutaneous injection, an intramuscular injection, and rectum administration by a suppository. Since the dose is also controllable by a route of administration and the number of times, when it can change broadly in accordance with condition, for example, uses as drugs, it is desirable per adult day 15microg - 300 mg/kg weight, and to consider it as 1 mg - 30 mg/kg weight preferably.

0012 The lipid metabolism improving composition of this invention can blend the avirulent carrier of an adequate amount with the effective dose of the above-mentioned curcumin etc. in the pharmaceutical-preparation-izing, and can prepare it to the pharmaceutical preparation for administration, etc. using the manufacturing method of arbitrary common use. When preparing to internal use, it is prepared by a soft capsule, a high capsule, a tablet, a granule, subtle granules, powder medicine, an active principle self-sustaining ***** agent, liquids and solutions, suspension, etc., and it is prepared by injections, drops, suppository, etc. when carrying out parenteral administration.

0013 Face pharmaceutical-preparation-izing and as an avirulent carrier, for example In this case,

sucrose esters, Fatty acid monoglyceride, propylene glycol fatty acid ester, a sorbitan fatty acid ester, Surface-active agents, such as lecithin, gum arabic, gelatin, sorbitol, a tragacanth gum, Binding materials, such as a polyvinyl pyrrolidone, sucrose, milk sugar, starch, crystalline cellulose, Mannite, light anhydrous silicic acid, magnesium aluminate, magnesium aluminometasilicate, Synthetic aluminum silicate, calcium carbonate, sodium bicarbonate, calcium hydrogen phosphate, Carboxymethyl-cellulose calcium, an excipient, magnesium stearate, Lubricant, such as talc and hydrogenated oil, salt, saccharin, orange oil, glycyrrhiza extract, Corrigents, such as citrate, grape sugar, menthol, eucalyptus oil, and malic acid, An odor-masking agent, coconut oil, olive oil, sesame oil, peanut oil, soybean oil, medium-chain-fatty-acid triglyceride, Polyvinyl derivatives, such as carbohydrate derivatives, such as cellulose, such as suspension, such as safflower oil and soybean phosphatide, a wetting agent, and cellulose acetate phthalate (CAP), and sugars, a methyl acrylate methacrylate copolymer, and dibasic acid monoester, other coat formation agents, It is prepared by the conventional method using ingredients, such as a coating auxiliary agent, and use is presented.

0014 Although the pharmaceutical preparation of membrane application and also injections are also prepared by the conventional method, When adopting the method which distilled water for injection is made to suspend for which or emulsify, As a suspending agent, soybean oil, peanut oil, medium-chain-fatty-acid triglyceride, etc. can be used, and sucrose fatty acid ester, fatty acid monoglyceride, propylene glycol fatty acid ester, a sorbitan fatty acid ester, lecithin, etc. can be used as an emulsifier, for example.

0015 The curcumin used as the active principle of this invention and its derivative, or when using at least one selected sort as food and drinks, 15micro **per effective dose of the above-mentioned curcumin etc., i.e., an adult day, g - 300 mg/kg weight -- preferably,** In addition to the food-and-drinks raw material of an adequate amount, and the food-and-drinks raw material which originally does not contain curcumin substantially in particular, processing manufacture can be carried out with the manufacturing method of common food and drinks at the effective dose used as 1 mg - 30mg /kg weight. under the present circumstances -- the kind of foodstuffs and a gestalt in particular are not limited -- for example, a drink, frozen desert, and jelly -- it can lift and can prepare to noodles, a Vienna sausage, fish sausage, etc. The health food of the presentation which the balance of protein, amino acid, lipid, a vitamin, a trace element, etc. was able to take especially, Especially the thing containing at least one sort chosen as functional food, a supplement, the foodstuffs for specific insurance, etc. in the curcumin which is an active principle of this invention, and its derivative is preferred in respect of prevention of diseases, such as hyperlipidemia, arteriosclerosis, diabetes mellitus, a fatty liver, and myocardial infarction, and an improvement.

0016 The lipid metabolism improving composition of this invention constituted in this way promotes lipid metabolism by activity enhancement of beta-oxidation facilitatory system enzyme of lipid, and it excels in the lipid metabolism improvement effect to which triglyceride in an organ is made to fall (the example of an examination, etc. explain this point further). Since the curcumin contained as an active principle and its derivative, or at least one selected sort is an ingredient conventionally contained in the turmeric etc. in which edible etc. is carried out as foodstuffs or a crude drug, it is satisfactory also especially in respect of safety, and does not have worries about side effects. Since various food intakes and a medication method are possible for the lipid metabolism improving composition of this invention, it can adjust a medication method and a dose, and concomitant use with a lot of use, other lipid metabolism improving agents, or an antilipidemic agent is also possible for it further again. Therefore, the lipid metabolism improving composition of this invention is effective in prevention of diseases, such as hyperlipidemia, arteriosclerosis, diabetes mellitus, a fatty liver, and myocardial infarction, and a therapy, and can be applied to food and drinks besides drugs etc. like ****.

0017

Example Although the example of an examination and working example are given and this invention is explained still more concretely hereafter, this invention is not limited to these working example. The refining things obtained by the following process were used for the curcumin of the example of an examination, and working example. 4 g of crude extracts were obtained from 100g in the Soxhlet extraction using acetone in the end of a turmeric it ground to about 40 meshes. The refining things 2.8g were obtained with the silicic acid **crude extract / this column**

chromatography using acetoneethanol GURAJUENTO liquid.

0018The example 1 of an examination The ddY system male mouse of eight weeks old by general diet (F-2, made in the Funabashi farm) for one week After habituation breeding, Use as basic feed synthetic diet (AIN-76) which contains soybean oil 15%, and An additive-free group (control group), The 1% curcumin addition group (invention group), the 1% red-chili-pepper hexane-extractable-material addition group (comparison group 1), and the 1% rosemary hexane-extractable-material administration group (comparison group 2) were bred for one week according to the dosage form of free ingestion by one groups **18** . After-slaughter liver was extracted for the after-fast animal of 24 hours in cervical dislocation after that, and the amount of triglyceride in liver was measured for lipid using the analysis kit of after-extraction marketing according to the method of Folch and others. This result is shown in the following table 1.

0019

Table 1

For drawings please refer to the original document.

0020(Consideration of Table 1) The thing containing the 1% curcumin of the invention group used as this invention range controlled accumulation of TORIGURIDO in liver of a mouse, and it became clear that the effect was remarkably high as compared with the spice extracts of other comparison groups 1 and 2 so that clearly from the above-mentioned table 1.

0021The example 2 of an examination SD system male rat of eight weeks old by general diet (F-2, made in the Funabashi farm) for one week After habituation breeding, Synthetic diet (AIN-93G) which contains soybean oil 15% was used as basic feed, and the additive-free group (control group), the 0.2% curcumin addition group (invention group 1), and the 1% curcumin addition group (invention group 2) were bred for two weeks according to the dosage form of free ingestion by one groups **six** . After-slaughter liver was extracted for the after-fast animal of 24 hours in cervical dislocation after that, and the amount of triglyceride in liver was measured like the above-mentioned example 1 of an examination. Fatty-acid-synthetase activity is simultaneously measured in the amount (NADPH-oxd) of oxidation type NADPH(s) after substrate addition, Acyl CoA oxidase activity was measured as a beta-oxidation facilitatory system enzyme by converting the hydrogen peroxide yield after substrate addition in the amount of coloring of oxidation type leuco dichlorofluoro ESSEIN (LDCF-oxd). These results are shown in the following table 2.

0022

Table 2

For drawings please refer to the original document.

0023(Consideration of Table 2) The thing containing 0.2% of the invention groups 1 and 2 used as this invention range and 1% of curcumin so that clearly from the above-mentioned table 2, Compared with the control group, the enhancing effect of the acyl CoA oxidase activity which is beta-oxidation facilitatory system enzyme, and the accumulation depressor effect of triglyceride in rat liver were accepted to not having exerted a big change on fatty-acid-synthetase activity, and these effects were anaclitic to curcumin addition concentration.

0024Working example 1-12 It is considered as the lipid metabolism improving composition which contains the curcumin used for this invention below as an active principle, injections, a suppository, a soft capsule, Cookie, a dressing, a food additive (curcumin pharmaceutical preparation), bevel-use syrup, ice cream, a jelly candy, and a sea bream rice cracker -- it lifts and noodles and a win NASO sage are illustrated.

0025working example 1: Preparation of injections

Curcumin 100g stearic acid monoglyceride 100g peanut oil Injections were prepared with the conventional method and it filled up 200g with the sucrose glycerin stearin ester 50g ascorbic acid stearate 20g distilled-water-for-injection 9530g above-mentioned presentation 10 ml of one ampul at a time.

0026

working example 2: Preparation of a suppository

Methyl salicylate The suppository was prepared with the conventional method by the 0.0350g FAMAZORU T-115 (trade name, Nissan chemicals company make) 2.0000g curcumin 0.0100g above-mentioned presentation.

0027working example 3: Soft capsule preparation-

A soft capsule and 50 pieces were prepared with the conventional method by the 5g of curcumin 10g corn oil 25g extracted tocopherol 1g ascorbyl-palmitate gelatin 52g above-mentioned presentation.

0028working example 4: Cookie preparation-

Curcumin 0.1g soybean vegetable oil 263g sugar Cookie was prepared with the conventional method by the 225g egg 63g cow's milk 20g weak flour 425g salt 2g above-mentioned presentation.

0029working example 5: Dressing preparation-

Rapeseed vegetable oil 65.5g vinegar 25g salt 0.6g monosodium glutamate 0.4g pepper 0.1g ** GARASHI 0.1g curcumin 0.1g onion juice 2.5g lemon juice The dressing was prepared with the conventional method by the 3.8g above-mentioned presentation.

0030working example 6: Food additive (curcumin pharmaceutical preparation) preparation-

Curcumin 20g glycerine fatty acid ester 7g medium-chain-fatty-acid triglyceride Curcumin pharmaceutical preparation was prepared with the conventional method by the 1.5g sorbitol 45g gum arabic 0.7g ethanol 6.5g water 19.3g above-mentioned presentation.

0031Preparation of working example 7:bevel-use syrup

Apple-fruit-juice 3-kg high-fructose corn syrup (75%) 30kg citrate Bevel-use syrup was prepared with the conventional method by the 0.2kgDL-malic acid 0.05-kg curcumin pharmaceutical preparation (working example 6) 0.2kg water 16.55-kg above-mentioned presentation.

0032working example 8: Ice cream preparation-

All the fat sweetened condensed milk 12.25-kg salt-free butter . 7.5-kg whipped cream 3-kg powdered skim milk -- a 5.5-kg sugar 4-kg starch syrup 12.5-kg salt 0.05-kg stabilizer 0.3-kg emulsifier -- with a conventional method by the 0.35-kg banana essence 0.15-kg curcumin pharmaceutical preparation (working example 6) 0.1kg water 54.3-kg above-mentioned presentation. Ice cream was prepared.

0033working example 9: Preparation of a jelly candy

The jelly candy was prepared with the conventional method by the 0.15 kg of agar-pulveratum 3-kg granulated sugar 32-kg starch syrup 50-kg water 1000-kg orange essence citrate 0.5-kg curcumin pharmaceutical preparation (working example 6) 0.1kg above-mentioned presentation.

0034Preparation of a working example 10:sea bream rice cracker

Sea bream ground fish 300g shrimp ground fish 60g salt 12g of sea bream rice crackers were prepared with the conventional method by the white sugar 15g monosodium glutamate 10g starch 600g curcumin pharmaceutical preparation (working example 6) 3g above-mentioned presentation.

0035working example 11: Lift and it is preparation of noodles .

Semi- strong flour 100 kg was lifted with the conventional method by the salt 0.5-kg saline water 0.5-kg curcumin pharmaceutical preparation (working example 6) 0.3kg water 30-kg above-mentioned presentation, and noodles were prepared.

0036working example 12: Vienna sausage preparation-

Pork By the 40g of lard 160g ice water 300g phosphate starch **3g / salt 16g sodium nitrite 0.05gL-sodium ascorbate 0.4g sodium glutamate 2g** curcumin pharmaceutical preparation (working example 6) 0.5g above-mentioned presentation, 540g with a conventional method. The Vienna sausage was prepared. **0037**

Effect of the InventionAccording to this invention, a safe lipid metabolism improving composition is provided also to the human body which has the outstanding hypotriglyceridemic action.

Field of the InventionThis invention relates to a safe lipid metabolism improving composition also to the human body which has a hypotriglyceridemic action.

Description of the Prior ArtConventionally, the content concentration rise in the blood of the lipid represented by triglyceride and cholesterol and an organ is considered to be the risk factor of adult disease induction of arteriosclerosis, a fatty liver, etc.

0003Although PUROBA statin, a KUOHIBU rate, nicomol, dextran sulfate, tocopherol nicotinate, etc. are known as a hyperlipemic drug in the former, for example, it is the actual condition which cannot say easily what each fully satisfies in respect of these side effects it has, and an effect.

0004On the other hand, curcumin and its derivative are contained in the flora of the tropical area and the subtropical system which are represented by the turmeric (*Curcuma longa* L.) which is the Zingiberaceae perennial. It is used as colorant for edible speiss, edible, and garments, and also is used as medical use especially in the Asian area until now, and a turmeric is a cholagogic operation as the pharmacological action.

Effect of the InventionAccording to this invention, a safe lipid metabolism improving composition is provided also to the human body which has the outstanding hypotriglyceridemic action.

Although a (choleretic action), built-in (liver, pancreas) functional potentiation, anti-inflammatory activity, the hemostatic action, and the stomachic operation are known, relation between the drug effect and each medicinal properties is not yet clarified thoroughly.

0005On the other hand, although it is known by JP,H7-149628,A that alpha-curcumene ($C_{15}H_{22}$) of the *Curcuma xanthorrhiza* (*Curcuma xanthorrhiza*) origin which is the Zingiberaceae perennial has a hypotriglyceridemic action, The chemical structure differs in curcumin ($C_{21}H_{20}O_6$) clearly. As a physiological function which the curcumin known until now has, it is a report of a cholesterol lowering action besides an antioxidant action and a cancer inhibition operation. Although there are **Internat.J.Vit.Nutr.Res., Vol.61, p364 (1991)**, it is not yet known that curcumin and its derivative have a hypotriglyceridemic action.

ExampleAlthough the example of an examination and working example are given and this invention is explained still more concretely hereafter, this invention is not limited to these working example. The refining things obtained by the following process were used for the curcumin of the example of an examination, and working example. 4 g of crude extracts were obtained from 100g in the Soxhlet extraction using acetone in the end of a turmeric it ground to about 40 meshes. The refining things 2.8g were obtained with the silicic acid **crude extract / this** column chromatography using acetoneethanol GURAJUENTO liquid.

0018The **example 1 of an examination** The ddY system male mouse of eight weeks old by general diet (F-2, made in the Funabashi farm) for one week After habituation breeding, Use as basic feed synthetic diet (AIN-76) which contains soybean oil 15%, and An additive-free group (control group), The 1% curcumin addition group (invention group), the 1% red-chili-pepper hexane-extractable-material addition group (comparison group 1), and the 1% rosemary hexane-extractable-material administration group (comparison group 2) were bred for one week according to the dosage form of free ingestion by one groups **18** . After-slaughter liver was extracted for the after-fast animal of 24 hours in cervical dislocation after that, and the amount of triglyceride in liver was measured for lipid using the analysis kit of after-extraction marketing according to the method of Folch and others. This result is shown in the following table 1.

0019

Table 1

For drawings please refer to the original document.

0020(Consideration of Table 1) The thing containing the 1% curcumin of the invention group used as this invention range controlled accumulation of TORIGURIDO in liver of a mouse, and it became clear that the effect was remarkably high as compared with the spice extracts of other comparison groups 1 and 2 so that clearly from the above-mentioned table 1.

0021The example 2 of an examination SD system male rat of eight weeks old by general diet (F-2, made in the Funabashi farm) for one week After habituation breeding, Synthetic diet (AIN-93G) which contains soybean oil 15% was used as basic feed, and the additive-free group (control group), the 0.2% curcumin addition group (invention group 1), and the 1% curcumin addition group (invention group 2) were bred for two weeks according to the dosage form of free ingestion by one groups six . After-slaughter liver was extracted for the after-fast animal of 24 hours in cervical dislocation after that, and the amount of triglyceride in liver was measured like the above-mentioned example 1 of an examination. Fatty-acid-synthetase activity is simultaneously measured in the amount (NADPH-oxd) of oxidation type NADPH(s) after substrate addition, Acyl CoA oxidase activity was measured as a beta-oxidation facilitatory system enzyme by converting the hydrogen peroxide yield after substrate addition in the amount of coloring of oxidation type leuco dichlorofluoro ESSEIN (LDCF-oxd). These results are shown in the following table 2.

0022

Table 2

For drawings please refer to the original document.

0023(Consideration of Table 2) The thing containing 0.2% of the invention groups 1 and 2 used as this invention range and 1% of curcumin so that clearly from the above-mentioned table 2, Compared with the control group, the enhancing effect of the acyl CoA oxidase activity which is beta-oxidation facilitatory system enzyme, and the accumulation depressor effect of triglyceride in rat liver were accepted to not having exerted a big change on fatty-acid-synthetase activity, and these effects were anaclitic to curcumin addition concentration.

0024Working example 1-12 It is considered as the lipid metabolism improving composition which contains the curcumin used for this invention below as an active principle, injections, a suppository, a soft capsule, Cookie, a dressing, a food additive (curcumin pharmaceutical preparation), bevel-use syrup, ice cream, a jelly candy, and a sea bream rice cracker -- it lifts and noodles and a win NASO sage are illustrated.

0025working example 1: Preparation of injections

Curcumin 100g stearic acid monoglyceride 100g peanut oil Injections were prepared with the conventional method and it filled up 200g with the sucrose glycerin stearin ester 50g ascorbic acid stearate 20g distilled-water-for-injection 9530g above-mentioned presentation 10 ml of one ampul at a time.

0026

working example 2: Preparation of a suppository

Methyl salicylate The suppository was prepared with the conventional method by the 0.0350g FAMAZORU T-115 (trade name, Nissan chemicals company make) 2.0000g curcumin 0.0100g above-mentioned presentation.

0027working example 3: Soft capsule preparation-

A soft capsule and 50 pieces were prepared with the conventional method by the 5g of curcumin 10g corn oil 25g extracted tocopherol 1g ascorbyl-palmitate gelatin 52g above-mentioned presentation.

0028working example 4: Cookie preparation-

Curcumin 0.1g soybean vegetable oil 263g sugar Cookie was prepared with the conventional method by the 225g egg 63g cow's milk 20g weak flour 425g salt 2g above-mentioned presentation.

0029working example 5: Dressing preparation-

Rapeseed vegetable oil 65.5g vinegar 25g salt 0.6g monosodium glutamate 0.4g pepper 0.1g ** GARASHI 0.1g curcumin 0.1g onion juice 2.5g lemon juice The dressing was prepared with the conventional method by the 3.8g above-mentioned presentation.

0030working example 6: Food additive (curcumin pharmaceutical preparation) preparation-

Curcumin 20g glycerine fatty acid ester 7g medium-chain-fatty-acid triglyceride Curcumin pharmaceutical preparation was prepared with the conventional method by the 1.5g sorbitol 45g gum arabic 0.7g ethanol 6.5g water 19.3g above-mentioned presentation.

0031Preparation of working example 7:bevel-use syrup

Apple-fruit-juice 3-kg high-fructose corn syrup (75%) 30kg citrate Bevel-use syrup was prepared with the conventional method by the 0.2kgDL-malic acid 0.05-kg curcumin pharmaceutical preparation (working example 6) 0.2kg water 16.55-kg above-mentioned presentation.

0032working example 8: Ice cream preparation-

All the fat sweetened condensed milk 12.25-kg salt-free butter . 7.5-kg whipped cream 3-kg powdered skim milk -- a 5.5-kg sugar 4-kg starch syrup 12.5-kg salt 0.05-kg stabilizer 0.3-kg emulsifier -- with a conventional method by the 0.35-kg banana essence 0.15-kg curcumin pharmaceutical preparation (working example 6) 0.1kg water 54.3-kg above-mentioned presentation. Ice cream was prepared.

0033working example 9: Preparation of a jelly candy

The jelly candy was prepared with the conventional method by the 0.15 kg of agar-pulveratum 3-kg granulated sugar 32-kg starch syrup 50-kg water 1000-kg orange essence citrate 0.5-kg curcumin pharmaceutical preparation (working example 6) 0.1kg above-mentioned presentation.

0034Preparation of a working example 10:sea bream rice cracker

Sea bream ground fish 300g shrimp ground fish 60g salt 12g of sea bream rice crackers were prepared with the conventional method by the white sugar 15g monosodium glutamate 10g starch 600g curcumin pharmaceutical preparation (working example 6) 3g above-mentioned presentation.

0035working example 11: Lift and it is preparation of noodles .

Semi- strong flour 100 kg was lifted with the conventional method by the salt 0.5-kg saline water 0.5-kg curcumin pharmaceutical preparation (working example 6) 0.3kg water 30-kg above-mentioned presentation, and noodles were prepared.

0036working example 12: Vienna sausage preparation-

Pork By the 40g of lard 160g ice water 300g phosphate starch **3g / salt 16g sodium nitrite 0.05gL-sodium ascorbate 0.4g sodium glutamate 2g** curcumin pharmaceutical preparation (working example 6) 0.5g above-mentioned presentation, 540g with a conventional method. The Vienna sausage was prepared.

Problem(s) to be Solved by the InventionThis invention tends to cancel this in view of the above-mentioned conventional actual condition etc.

The purpose is to provide a safe lipid metabolism improving composition also to the human body which has a hypotriglyceridemic action.

Means for Solving the ProblemThis invention persons have the operation which a specific component contained in a flora etc. of a turmeric system which is the Zingiberaceae perennial plant as a result of inquiring wholeheartedly that an aforementioned problem etc. should be solved inhibits for accumulation of triglyceride in liver, and. By finding out that safety is high also to a human body, it succeeds in obtaining a lipid metabolism improving composition of the above-mentioned purpose, and came to complete this invention. That is, a lipid metabolism improving composition of this invention contains at least one sort chosen from curcumin and its derivative as an active principle.

0008

Embodiment of the InventionBelow, an embodiment of the invention is described in detail. The lipid metabolism improving composition of this invention contains at least one sort chosen from curcumin and its derivative as an active principle.

0009The curcumin used for this invention is 1,7-bis-(4-hydroxy-3-methoxypheny) hepta-1,6-

diene- 3,5-dione, and is demethoxycurcumin as a curcumin derivative, for example. **4-hydroxy-cinnamoyl (4-hydroxy-3-methoxy-cinnamoyl) methane Bis-demethoxycurcuminBis-(4-hydroxy-cinnamoyl)methane** ** is mentioned. These can use anything of chemosynthesis or vegetable origin. For example, curcumin and/or its derivative can be extracted from vegetation, such as an arrowroot from India, zedoary, mango JISHIJA, yellow zedoary **besides the turmeric (Curcuma longa L.) of the Zingiberaceae perennial**, black zedoary, and gallane girl. Although the compound with at least one pure sort chosen from curcumin and its derivative can be used in this invention, Unless an impurity unsuitable as not the thing limited to this but drugs and foodstuffs is contained, half-refining or crude curcumin, and/or its derivative can also be used. For example, from the above-mentioned turmeric to a rough curcumin extract. Usually, what bis-demethoxycurcumin 5% was contained demethoxycurcumin 7%, and curcumin could use this rough curcumin extract 37% of the weight (only henceforth "%"), and refined curcumin etc. from this curcumin extract to 100% may be used.

0010As at least one sort of preparing methods chosen from the curcumin used for this invention, and its derivative, a publicly known method is employable from the former, for example. For example, grind in mean particle diameter of 250-500 micrometers, and a turmeric on a hydrophilic solvent and a concrete target. Using ethanol, acetone, and ethylene dichloride, an extract is obtained, it ranks second with a Soxhlet method or a cooling filtration process, and the method of refining this extract using distillation under reduced pressure and a silicic acid column, etc. are mentioned.

0011The lipid metabolism improving composition of this invention contains one sort (independent) or two sorts or more as an active principle by making into an active principle at least one sort chosen from the curcumin mentioned above and its derivative, namely, they can be used for it as drugs, ingesta (elegance), etc. When using as drugs, it can use together with other lipid metabolism improving agents the above-mentioned curcumin and its derivative, at least one selected sort, or if needed, and a medicine can be prescribed for the patient by various methods, such as internal use, an intravenous injection, subcutaneous injection, an intramuscular injection, and rectum administration by a suppository. Since the dose is also controllable by a route of administration and the number of times, when it can change broadly in accordance with condition, for example, uses as drugs, it is desirable per adult day 15microg - 300 mg/kg weight, and to consider it as 1 mg - 30 mg/kg weight preferably.

0012The lipid metabolism improving composition of this invention can blend the avirulent carrier of an adequate amount with the effective dose of the above-mentioned curcumin etc. in the pharmaceutical-preparation-izing, and can prepare it to the pharmaceutical preparation for administration, etc. using the manufacturing method of arbitrary common use. When preparing to internal use, it is prepared by a soft capsule, a high capsule, a tablet, a granule, subtle granules, powder medicine, an active principle self-sustaining ***** agent, liquids and solutions, suspension, etc., and it is prepared by injections, drops, suppository, etc. when carrying out parenteral administration.

0013Face pharmaceutical-preparation-izing and as an avirulent carrier, for example In this case, sucrose esters, Fatty acid monoglyceride, propylene glycol fatty acid ester, a sorbitan fatty acid ester, Surface-active agents, such as lecithin, gum arabic, gelatin, sorbitol, a tragacanth gum, Binding materials, such as a polyvinyl pyrrolidone, sucrose, milk sugar, starch, crystalline cellulose, Mannite, light anhydrous silicic acid, magnesium aluminate, magnesium aluminometasilicate, Synthetic aluminum silicate, calcium carbonate, sodium bicarbonate, calcium hydrogen phosphate, Carboxymethyl-cellulose calcium, an excipient, magnesium stearate, Lubricant, such as talc and hydrogenated oil, salt, saccharin, orange oil, glycyrrhiza extract, Corrigents, such as citrate, grape sugar, menthol, eucalyptus oil, and malic acid, An odor-masking agent, coconut oil, olive oil, sesame oil, peanut oil, soybean oil, medium-chain-fatty-acid triglyceride, Polyvinyl derivatives, such as carbohydrate derivatives, such as cellulose, such as suspension, such as safflower oil and soybean phosphatide, a wetting agent, and cellulose acetate phthalate (CAP), and sugars, a methyl acrylate methacrylate copolymer, and dibasic acid monoester, other coat formation agents, It is prepared by the conventional method using ingredients, such as a coating auxiliary agent, and use is presented.

0014Although the pharmaceutical preparation of membrane application and also injections are also prepared by the conventional method, When adopting the method which distilled water for injection

is made to suspend for which or emulsify, As a suspending agent, soybean oil, peanut oil, medium-chain-fatty-acid triglyceride, etc. can be used, and sucrose fatty acid ester, fatty acid monoglyceride, propylene glycol fatty acid ester, a sorbitan fatty acid ester, lecithin, etc. can be used as an emulsifier, for example.

0015The curcumin used as the active principle of this invention and its derivative, or when using at least one selected sort as food and drinks, 15micro **per effective dose of the above-mentioned curcumin etc., i.e., an adult day, g - 300 mg/kg weight** -- preferably, In addition to the food-and-drinks raw material of an adequate amount, and the food-and-drinks raw material which originally does not contain curcumin substantially in particular, processing manufacture can be carried out with the manufacturing method of common food and drinks at the effective dose used as 1 mg - 30mg /kg weight. under the present circumstances -- the kind of foodstuffs and a gestalt in particular are not limited -- for example, a drink, frozen desert, and jelly -- it can lift and can prepare to noodles, a Vienna sausage, fish sausage, etc. The health food of the presentation which the balance of protein, amino acid, lipid, a vitamin, a trace element, etc. was able to take especially, Especially the thing containing at least one sort chosen as functional food, a supplement, the foodstuffs for specific insurance, etc. in the curcumin which is an active principle of this invention, and its derivative is preferred in respect of prevention of diseases, such as hyperlipidemia, arteriosclerosis, diabetes mellitus, a fatty liver, and myocardial infarction, and an improvement.

0016The lipid metabolism improving composition of this invention constituted in this way promotes lipid metabolism by activity enhancement of beta-oxidation facilitatory system enzyme of lipid, and it excels in the lipid metabolism improvement effect to which triglyceride in an organ is made to fall (the example of an examination, etc. explain this point further). Since the curcumin contained as an active principle and its derivative, or at least one selected sort is an ingredient conventionally contained in the turmeric etc. in which edible etc. is carried out as foodstuffs or a crude drug, it is satisfactory also especially in respect of safety, and does not have worries about side effects. Since various food intakes and a medication method are possible for the lipid metabolism improving composition of this invention, it can adjust a medication method and a dose, and concomitant use with a lot of use, other lipid metabolism improving agents, or an antilipidemic agent is also possible for it further again. Therefore, the lipid metabolism improving composition of this invention is effective in prevention of diseases, such as hyperlipidemia, arteriosclerosis, diabetes mellitus, a fatty liver, and myocardial infarction, and a therapy, and can be applied to food and drinks besides drugs etc. like ****.
